CURRICULUM VITAE

Bhubaneswar Pradhan, Ph.D.
Director, Quality Testing Laboratory
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Sex: Male **Nationality**: Indian **Date of Birth**: 13th March 1983

BROAD AREA OF RESEARCH INTEREST

Molecular basis of host-pathogen interaction, Small RNA and RNAi, Functional genomics, Medicinal plant genomics and metabolomics, Physiology and Molecular biology of plant stress tolerance

TEACHING INTEREST

Plant genetic engineering and Molecular pharming, Plant-microbe-arthropod interaction, Plant virology, Plant physiology and developmental biology, Functional genomics, Small RNA and RNAi

EDUCATION

Year	Qualifying Degree
2015	**Doctor of Philosophy in Biotechnology** *Ph.D. thesis title*: Isolation and Characterization of microRNA in Plants under different biotic stress conditions Institute of Life Sciences, (Dept. of Biotechnology, Govt. of India) Bhubaneswar, India Supervisor: Dr. Nrisingha Dey
2008	**Master of Science in Agriculture (Biotechnology) CGPA: 8.36/10** *Master's thesis title: In silico* mining and validation of molecular markers closely linked to gall midge resistance gene *Gm4* in rice (*Oryza sativa* L.) Indira Gandhi Agricultural University, Raipur, India Supervisor: Dr. Devendra Kumar Sharma
2006	**Bachelor of Science in Agriculture CGPA: 7.65/10** Orissa University of Agriculture and Technology, Bhubaneswar, India

PAST RESEARCH EXPERIENCES

Period	Organization
01/2021 – 08/2021	**Postdoctoral Research Associate-Agri-Business Incubator** ICAR-Indian Institute of Agricultural Biotechnology, Ranchi, Jharkhand, India **ACTIVITY:** My research focussed on creating jackfruit-based food processing products, developing nutrient (Calcium) rich composting techniques for acid soil conditions, and providing training to the incubatees. Additionally, I conducted fundamental research in Jack (Artocarpus heterophyllus) genomics, and the results/observations of which were published in the Journal of Genomics, Volume 114, Issue 3, May 2022 (https://doi.org/10.1016/j.ygeno.2022.110356).
07/2018 – 01/2021	**SERB-NPDF (National postdoctoral fellow)** ICAR-Indian Institute of Agricultural Biotechnology, Ranchi, Jharkhand, India **ACTIVITY:** My postdoctoral research focused on understanding the underlying molecular mechanisms of heat stress in contrasting groundnut cultivars, DRG1 (susceptible) and ICGS44 (tolerant), using a transcriptomics approach. To elucidate the genetic regulation of heat stress during the reproductive phase in groundnuts, several heat shock transcription factors, and heat shock proteins including a few other genes were found to be differentially expressed in the tolerant and the susceptible ones.
11/2017 – 06/2018	**SERB-NPDF (National postdoctoral fellow)** ICAR-Directorate of Groundnut Research, Junagadh, Gujarat, India **ACTIVITY:** My postdoctoral research focused on understanding the underlying molecular mechanism concerning heat stress in contrasting groundnut cultivars DRG1 (susceptible) and ICGS44 (tolerant) using the transcriptomics approach.
09/2016 – 10/2017	**Research Associate** Molecular Plant Physiology Laboratory, ICAR-National Rice Research Institute, Cuttack, India **ACTIVITY:** The research work focused on screening and characterization of rice germplasms for salinity and partial submergence tolerance and their underlying molecular mechanism. Chlorophyll fluorescence (ChlF) imaging technique was employed for the precise phenotyping.
06/2016 – 09/2016	**Senior Research Fellow** Molecular Plant Physiology Laboratory, ICAR-National Rice Research Institute, Cuttack, India
07/2015 – 05/2016	**Senior Research Fellow** Department of Gene function and Regulation, Institute of Life Sciences (DBT, Govt. of India), Bhubaneswar, India

07/2010 – 06/2015	**Graduate Student**
	Department of Gene Function and Regulation, Institute of Life Sciences (DBT, Govt. of India), Bhubaneswar, India
12/2008 – 06/2010	**Junior Research Fellow**
	Plant Molecular Biology Laboratory, International Center for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India
2007 - 2008	**Master's Dissertation**
	Department of Biotechnology, Indira Gandhi Agricultural University, Raipur, India

EMPLOYMENT DETAILS

Director **05/08/2024 till Date**

Quality Testing Laboratory, Ramakrishna Mission Vivekananda Educational and Research Institute, Narendrapur, Kolkata, India

Assistant Professor **05/08/2021 till Date**

Department of Agricultural Biotechnology, Ramakrishna Mission Vivekananda Educational and Research Institute, Narendrapur, Kolkata, India

AWARDS, HONORS & RECOGNITIONS

Year	Awards/ Honors/ Recognition
2019	**Best Oral presentation at** National Conference on Doubling Farmers Income for Sustainable & Harmonious Agriculture, DISHA-*BAU, Ranchi*, Jharkhand, India
2017	**SERB-NPDF (National Postdoctoral Fellowship)** *Department of Science and Technology*, Govt. of India
2011	**ARS-NET (National Eligibility Test) for Lectureship** *Agricultural Scientists Recruitment Board*, India
2010	**CSIR-NET (National Eligibility Test) for Lectureship** *Council of Scientific and Industrial Research*, India
2010	**DST-INSPIRE Fellowship for Doctoral study** *Department of Science and Technology*, Govt. of India
2006	**DBT-Fellowship for pursuing master's degree** *Department of Biotechnology*, Govt. of India
2006	Qualified in **Junior Research Fellowship,** entrance for master's program conducted by Indian Council of Agricultural Research *Indian Council of Agricultural Research*, India

SPECIALIZED TRAINING COURSES & SYMPOSIUMS ATTENDED

Period	Symposium/Training	Venue
15th-16th March 2022	Workshop on Research Methodology and IPR	Central Ayurveda Research Institute, Kolkata
8th-10th April 2021	International Symposium on "Advances in Plant Biotechnology and Genome Editing" & 42nd Annual Meeting of Plant Tissue Culture Association – India (APBGE-2021)	ICAR-IIAB, Ranchi through virtual mode
10th-11th Aug 2019	National conference on Doubling Farmers Income for sustainable & Harmonious Agriculture, DISHA-2019	BAU, Ranchi, India
14th Sept 2018	Augmenting Writing Skills for Articulating Research (AWSAR) workshop	IACS, Kolkata, India
13th Aug 2014	Responsible Conduct of Science	ILS, Bhubaneswar, India
10th Apr 2014	The Welcome Trust/DBT India Alliance Science and Communication Workshop	ILS, Bhubaneswar, India
22nd Nov 2012	ASM Virtual Workshop on Scientific Writing and Publishing	KIIT University, Bhubaneswar, India
2nd-5th Jan 2012	Indian Science Congress, the 99th Session	KIIT University, Bhubaneswar, India
16th-18thDec 2011	XXXV All India Cell Biology Conference	NISER, Bhubaneswar, India
9th-21st Nov 2009	Geminivirus Genome and Its Impact on RNAi: Meetings and courses	ICGEB, New Delhi, India
18th-3rd Oct 2008	DNA Markers, Genomics and Transgenics: A Hands-on Workshop	IGAU, Raipur, India

SKILLS AND EXPERTISE

Technical Skills

- ***Molecular Biology:*** Nucleic acid purification (DNA and RNA), molecular cloning, bacterial transformation, PCR, qPCR, blotting techniques (Northern blot, Southern blot, and dot blot), microRNA cleavage site mapping by modified 5′ RACE PCR.
- ***Cell biology:*** Transient expression of proteins in plants by agro-infiltration, protoplast transfection, *Agrobacterium* and particle gun mediated plant transformation and transgenics
- ***Proteomics:*** Recombinant protein expression induction, extraction, and purification, affinity chromatography, ELISA, co-immunoprecipitation.
- ***Bioinformatics:*** Transcriptome and next-generation sequencing analysis, web based and workstation based routine bioinformatics analysis, nucleic acid and protein sequence analysis, artificial microRNA design, promoter and transcription factor analysis

PUBLICATIONS

1. Hansda. A., Chand, S.K., **Pradhan, B.,** Chand, S., Shukla, A.K., Rout, P.R. **2024**. Toxicological

Impacts and Microbial-Mediated Degradation Processes of Microplastics. **Journal of Hazardous, Toxic, and Radioactive Waste**. *Accepted*

2. Jena, S., Sanyal, R., Jawed, D. M., Sengupta, K., **Pradhan, B.,** Sinha, S. K., Sarkar, B., Kumar, S., Lenka, S.K., Naskar, S., Bhadana, V.P., and Bishi, S. K. **2024**. Spatio-temporal expression of polyphenol oxidase unveils the dynamics of L-DOPA accumulation in faba bean (*Vicia faba* L.). **Physiology and Molecular Biology of Plants**, 1-12.

3. Pradhan, A., Jangid, KK., **Pradhan, B.**, Her, LK., Uchale, S., and Rane, J. **2023**. Quinoa: Opportunity for Nutritional and Food Security in Changing Climate. In: Exotic and Underutilized Crops in India Cultivating Diversity for Nutrition and Prosperity, Edited by Pradhan, J., Satpathy, B., Singh, H. and Prasad, K. Exotic and underutilized Crops in India: Cultivating diversity for nutrition and prosperity. **Elite Publishing House, New Delhi, India**. ISBN: 978-93-58995-37-4.

4. Panda, D., Rani, K., Behera, P. K., **Pradhan, B.,** & Lenka, S. K. **2023**. Nutritional diversity and food potential of indigenous pigmented rice landraces from Koraput regions of Eastern Ghats. **Discover Food**, 3(1), 16.

5. Sarkar, R., Mukherjee, S., **Pradhan, B.,** Chatterjee, G., Goswami, R., Ali, M. N., & Ray, S. S. **2023**. Molecular characterization of vermicompost-derived IAA-releasing bacterial isolates and assessment of their impact on the root improvement of banana during primary hardening. **World Journal of Microbiology and Biotechnology**, 39(12), 351.

6. Sanyal, R., **Pradhan, B.,** Jawed, D.M., Tribhuvan, K.U., Dahuja, A., Kumar, M., Kumar, N., Mishra, G. P., Ram, C., Mahatma, M. K., Singh, B. K., Mangrauthia, S. K., Singh, A.K., Sharma, T. R., Pattanayak, A., Bishi, S. K. **2023**. Spatio-temporal expression pattern of Raffinose Synthase genes determine the levels of Raffinose Family Oligosaccharides in peanut (*Arachis hypogaea* L.) seed. **Scientific Reports**,13, 795. https://doi.org/10.1038/s41598-023-27890-z

7. **Pradhan, B.,** Chand, S., Chand, S., Rout, P.R., & Naik, S.K. **2023**. Emerging groundwater contaminants: A comprehensive review on their health hazards and remediation technologies, **Groundwater for Sustainable Development**, Volume 20, 100868, ISSN 2352-801X, https://doi.org/10.1016/j.gsd.2022.100868

8. Kumar, K., Mandal, S. N., **Pradhan, B.,** Kaur, P., Kaur, K., & Neelam, K. **2022**. From evolution to revolution: accelerating crop domestication through genome editing. **Plant and Cell Physiology**, *63*(11), 1607-1623. https://doi.org/10.1093/pcp/pcac124

9. **Pradhan, B.,** Panda, D., Bishi, S. K., Chakraborty, K., Muthusamy, S. K., & Lenka, S. K. **2022**. Progress and prospects of C4 trait engineering in plants. **Plant Biology**. https://doi.org/10.1111/plb.13446

10. Mukherjee, S., Sain, S., Ali, M.N., Goswami, R., Chakraborty, A., Ray, K., Bhattacharjee, R., **Pradhan, B.,** Ravisankar, N., and Chatterjee G. **2022**. Microbiological properties of Beejamrit, an ancient Indian traditional knowledge, uncover a dynamic plant-beneficial microbial network. **World Journal of Microbiology and Biotechnology** 38, no. 7 (2022): 1-12.

11. Chand, S., **Pradhan, B.,** Chand, S., & Naik, S. K. **2022**. Solid waste and landfill leachate: A transient source of emerging microbes and legacy contaminants for groundwater pollution. **In Contaminants of Emerging Concerns and Reigning Removal Technologies**. ***CRC Press,*** pp. 123-149.

12. Tribhuvan, K. U., Singh, D. K., **Pradhan, B.,** Bishi, S. K., Pandey, A., Kumar, S., ... & Singh, B. K. **2022**. Sequencing and de novo transcriptome assembly for discovering regulators of gene expression in Jack (***Artocarpus heterophyllus***). **Genomics**, 110356.

13. Chandrasekhar, K., **Pradhan, B.,** Roychowdhury, R., Dubey, V.K. **2021.** Improvement of wheat (*Triticum* spp.) through gene manipulation; **In: Genetically Modified Crops Current Status, Prospects and Challenges Edited by Kishor, P. B. Kavi, Rajam, M. V., Pullaiah, T.** ***Springer Singapore*** (***Accepted for Publication***), ISBN 978-981-15-5897-9_3. https://doi.org/10.1007/978-981-15-5897-9_3

14. Chakraborty, K., Mondal, S., Ray, S., Samal, P., **Pradhan**, **B**., Chattopadhyay, K., Kar, M.K., Swain, P., Sarkar, R.K. **2020**. Tissue tolerance coupled with ionic discrimination can potentially minimize the energy cost of salinity tolerance in rice. ***Frontiers in Plant Science*****:11**. 265 https://www.frontiersin.org/article/10.3389/fpls.2020.00265.

15. Pradhan, B., Chakraborty, K., Prusty, N., Deepa, Mukherjee, A., Chattopadhyaya, K., Sarkar, R.K. **2019**. Distinction and characterization of rice genotypes tolerant to combined stresses of salinity and partial submergence, proved by high resolution chlorophyll fluorescence imaging system. ***Functional Plant Biology*****: 46 (3),** 248-261. https://doi.org/10.1071/FP18157.

16. Pradhan, B., Jangid, K., Sarwat, M., Bishi, S.K. **2019**. Role of histones during leaf senescence: **In: Senescence signalling in plants by Sarwat M and Tuteja N.** ***Academic Press***, pp 187-197, ISBN 9780128131879. https://doi.org/10.1016/B978-0-12-813187-9.00011-1.

17. Prusty, N[#]., **Pradhan, B[#]., ** Deepa., Chattopadhyaya, K., Patra, B.C., Sarkar, R.K. **2018**. Novel rice (*Oryza sativa* L.) germplasm tolerant to combined effect of flooding and salt stress. ***Indian Journal of Plant Genetic Resources*****: 31 (3),** 260-269**. ([#] Co-first author, equal contribution).**

18. Vijayan, J., Senapati, S., Ray, S., Chakraborty, K., Molla, K.A., Basak, N., **Pradhan, B.,** Yeasmin, L., Chattopadhyay, K. and Sarkar, R.K. **2018**. Transcriptomic and physiological studies identify cues for germination stage oxygen deficiency tolerance in rice. ***Environmental and Experimental Botany*****: 147**, 234-248. doi.org/10.1016/j.envexpbot.2017.12.013.

19. Pradhan, B., Tien V. V., Dey, N., Mukherjee, S.K. **2017**. Molecular biology of Geminivirus DNA replication: In Viral Replication. ***Avidscience publication***. pp 2-34. http://www.avidscience.com/book/viral-replication/.

20. Pradhan, B., Naqvi, A.R., Saraf, S., Mukherjee, S.K., Dey, N. **2015**. Prediction and characterization of Tomato leaf curl New Delhi virus (ToLCNDV) responsive novel microRNAs in *Solanum lycopersicum*. ***Virus Research*****. 195**, 183–195. doi: 10.1016/j.virusres.2014.09.001.

21. Ranjan, R., Patro, S., **Pradhan, B.,** Kumar, A., Maiti, I.B, Dey, N. **2012**. Development and functional analysis of novel genetic promoters using DNA shuffling, hybridization and a combination thereof. ***PLos ONE*** **7(3)**: e31931. doi: 10.1371/journal.pone.0031931.

22. Naqvi, A.R., Sarwat M., **Pradhan B.**, Choudhury N.R., Haq Q.M.R., Mukherjee, S.K. **2011**. Differential expression analyses of host genes involved in systemic infection of Tomato leaf curl New Delhi virus (ToLCNDV). ***Virus Research*****. 160**: 395–399. doi: 10.1016/j.virusres.2011.05.002.

DECLARATION

I hereby declare that all the furnished above are true and correct to the best of my knowledge.

Date: 16-08-2024 **Bhubaneswar Pradhan**

Place: Narendrapur, Kolkata